

DHRUV KUMAR

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RESEARCH INTERESTS	Distributed Systems, Big Data Analytics, Machine Learning.	
EDUCATION	University of Minnesota , Twin Cities, United States <i>PhD in Computer Science</i>	Sep 2017 - Present
	<ul style="list-style-type: none">• CGPA: 4.0 / 4.0• 3M Science and Technology Fellowship.• Relevant Courses: Distributed Systems, Machine Learning, Non-Linear Optimization, Matrix Theory, Probability and Statistics.	
	Birla Institute of Technology and Science (BITS) , Pilani, India <i>Bachelor of Engineering (Hons.) Computer Science</i>	Aug 2010 - May 2014
	<ul style="list-style-type: none">• CGPA: 9.92 / 10.0• Rank 1 in Class of 2014 of Computer Science, comprising of 120 students.• Rank 3 in Class of 2014 of BITS-Pilani, comprising of 800 students.• Relevant Courses: Data Structures, Algorithms, Computer Organization, Operating Systems, Database Systems, Computer Networks, Programming Languages, Compiler Construction, Data Mining, Machine Learning.	
RESEARCH EXPERIENCE	Distributed Computing Systems Group, UMN, Twin Cities Project: <i>Geo-distributed Streaming Analytics</i> Mentors: <i>Abhishek Chandra, Ramesh Sitaraman</i>	Jan 2018 - Present
	<ul style="list-style-type: none">• Design of algorithms for optimizing Timeliness, Accuracy and Latency in Geo-distributed Streaming analytics.• Implementation done on top of Apache Flink.	
	ADAPT Lab, BITS-Pilani Project: <i>A New Distributed Computing Framework for Data Mining</i> Mentors: <i>Navneet Goyal, Poonam Goyal, Sundar Balasubramaniam</i>	Apr 2013 - Oct 2014
	<ul style="list-style-type: none">• Designed and implemented data mining algorithms such as OPTICS, SLINK, DBSCAN for shared memory and distributed memory models.• Used data distribution and task parallelism techniques for exploiting multicore and multinode architectures. Implemented using OpenMP and OpenMPI libraries in C.• The work resulted in a number of publications. (See below)	
PUBLICATIONS	D Kumar , J Li, A Chandra, R Sitaraman. <i>TTL-based Approach for Data Aggregation in Geo-Distributed Streaming Analytics</i> , Poster at 13th USENIX Symposium on Operating Systems Design and Implementation (OSDI), 2018.	

OLD
PUBLICATIONS¹

D Kumar, P Goyal, N Goyal. *An Efficient method for Batch Updates in OPTICS Cluster Ordering*, in International Journal of Data Analysis Techniques and Strategies, 2018.[\[Link\]](#)

P Goyal, S Kumari, A Sood, **D Kumar**, Sundar B, and N Goyal. *Exact, Fast and Scalable Parallel DBSCAN for Commodity Platforms*, in International Conference on Distributed Computing and Networking (ICDCN), 2017.[\[Link\]](#)

P Goyal, S Kumari, S Sharma, **D Kumar**, V Kishore, Sundar B, and N Goyal. *A fast, Scalable SLINK Algorithm for Commodity Cluster Computing Exploiting Spatial Locality*, in IEEE International Conference on High Performance Computing and Communications (HPCC), 2016.[\[Link\]](#)

P Goyal, S Kumari, **D Kumar**, Sundar B, N Goyal, S Islam, and JS Challa. *Parallelizing OPTICS for Commodity Clusters* in International Conference on Distributed Computing and Networking (ICDCN), 2015.[\[Link\]](#)

P Goyal, S Kumari, **D Kumar**, Sundar B, and N Goyal. *Parallelizing OPTICS for multicore systems* in ACM India Computing Conference (ACM COMPUTE), 2014.[\[Link\]](#)

PROFESSIONAL
EXPERIENCE

Several Startups
Technology and Strategy

Apr 2016 - Aug 2017

- Designed and implemented the entire back-end for three startups from scratch.
- The entire back-end functionality was exposed using RESTful APIs implemented using Django web framework and hosted using Amazon web services.
- Gained valuable experience in building scalable and secure back-ends for web and mobile applications.

Goldman Sachs, Bengaluru, India
Software Developer, Investment Management Division

Nov 2014 - Apr 2016

- Improved the efficiency of risk-management system by suggesting improvements to the SQL queries going to Sybase IQ database.
- Assisted in migrating from Sybase IQ database to MemSQL database for faster access.
- Wrote APIs for accessing MemSQL database.
- Implemented a H2-database based server for allowing real-time updates to the tables residing in the servers.
- Learnt about the real life use-cases of databases.

CSIR-CEERI, Pilani, India
Machine Learning Intern

May 2012 - July 2012

- Studied, compared and implemented various unsupervised machine learning algorithms.
- Learnt about the use of these algorithms in real world applications

SELECTED
ACADEMIC
PROJECTS

Win-Loss Prediction for Chess using Machine Learning

Nov 2017 - Dec 2017

- Training data comprised of endgames with 6 or lesser number of pieces remaining. For such endgames, Nalimov Tablebases have win-loss score for every possible configuration.
- Trained a variety of models including logistic regression, Neural Networks.
- Achieved an accuracy of 85% on the validation dataset.

Restaurant Recommender System

Oct 2013 - Nov 2013

¹work done during undergraduate studies

- An application which can recommend suitable restaurants based on user inputs of location, type of cuisine, type of meal, etc.
- Restaurant reviews taken from yelp.com and processed using NLP techniques.

Compiler Construction for a “Toy” Language

Jan 2013 - Apr 2013

- Designed lexical, syntax, semantic, code generation phases of compiler in C.
- Efficient use of Hash Tables for constructing symbol tables.

TECHNICAL SKILLS

- **Programming:** C, Java, Python, OpenMPI, OpenMP, MySQL, Verilog, Matlab
- **Mobile and Web Technologies:** HTML, CSS, JavaScript, AngularJS, Django, Android
- **Cloud platforms:** Amazon web services

HONORS AND AWARDS

- Awarded a four-year 3M Science and Technology Fellowship for pursuing PhD at the University of Minnesota, Twin Cities. Fellowship covers full tuition fees and annual stipend.
- Awarded merit scholarship of total worth Rs 4,75,000 for being in top 10 students among 800 students of BITS, Pilani by the institute. [**Aug, 2010 - May 2014**]
- Awarded research incentive fellowship of Rs 25,000 in recognition of the contribution in the undergraduate thesis project. [**May 2014**]